Remarks

Claims 1, 2, 4-9, 11-13, 15-19, and 21 were pending in the application when last examined. Claims 1, 5, 12, and 16 are amended.

Claim Objections

Claims 4 and 15 are objected to for depending from canceled claims. Corrections have been made.

Claim Rejections – 35 USC §103

Claims 1, 2, 4, 6, 8-13, 15, 17, and 19-21 are rejected under 35 USC 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0015028 to Park ("Park") in view of U.S. Patent Application Publication No. 2006/0033695 to Kudo et al. ("Kudo").

Independent Claim 1 is patentable over Park and Kudo at least because it recites "a plurality of data drivers coupled to the gray voltage generator and ... individually receiv[ing] analog gamma reference voltages ...wherein the generating of the independent gamma curves is done by the gray voltage generator." In the pending Office Action, the Examiner stated that the argument in the Response to Office Action that was submitted on January 3, 2008 ("the last Response")was based on a misunderstanding of "the concept of combining the references" and clarified that the rejection holds because Kudo teaches the concept of providing different digital gamma signals for different pixel colors to generate independent gamma curves for different pixel colors (see pending Office Action, pages 2-3).

Applicants appreciate the clarification on this point. However, it should be noted that Applicants are not attempting to broadly claim a liquid crystal display driving apparatus that have the elements recited in Claim 1 and generates color-specific gamma curves. As stated in the Background section of the Application, "LCDs that use separate gamma reference voltages for the respective colors have been made" (Application, page 2, lines 11-12) and Applicants are aware of the existence of these attempts. The crux of the invention disclosed in the Application is that it allows this use of separate gamma reference voltages to be done without increasing the number of pins on the data driver or requiring additional blocks for generating color-specific gamma reference voltages (Application, page 2, lines 12-17). In other words, one of the

advantages of the invention is that color-specific gamma reference voltages can be achieved more efficiently than by previously-known methods/apparatuses. To this effect, Applicants disagree with the statement that "It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the signal controller of Park to generate different digital gamma signals for different pixel colors by using the concept of Kudo ..." (pending Office Action, bottom of page 4).

As shown in FIG. 3 of the Application, a plurality of data drivers 501-508 are coupled to the gray voltage generator 800. This stands in stark contrast from the architecture described in Park. Park's FIG. 3 shows a column driver IC 14, which the Office Action indicates corresponds to a combination of the "gray voltage generator" and the "data driver." Park's FIG. 1 shows that there are a plurality of column driver ICs, meaning that there is an individual "gray voltage generator" for each "data driver" in Park's architecture. Thus, Park's architecture requires more circuitry than that of the invention, and even if used to generate color-specific gamma reference voltages, would be a less efficient way of achieving the goal.

As for Kudo, while it arguably discloses the general concept of color-specific gamma reference voltage generation, it fails to teach or suggest the architecture that is recited in Claim 1. Kudo's FIG. 16 shows an architecture in which the control register 301 makes separate gamma characteristic adjustments for the different color data. According to the Office Action mailed on October 3, 2007 ("the previous Office Action"), Kudo's MPU 906, system interface 907, and control register 301 collectively correspond to the "signal controller," and Kudo's gray scale voltage generating circuit 302 correspond to the "gray voltage generator" (previous Office Action, page 4). Under this reading of Kudo, the gray voltage generator receives signals that have already been adjusted based on color. This contradicts the limitation that the "the generating of the independent gamma curves is done by the gray voltage generator" because the gray voltage generator receives signals that have already been adjusted for color-specific gamma voltage generation. In the invention, the color-specific gamma voltage generation is handled by the gray voltage generator, not by the signal controller.

Claims 2, 4, 6, and 8-11 depend from Claim 1 and are patentable over Park and Kudo for the reasons stated above.

Independent Claim 12 is patentable over Park and Kudo because it recites a "signal controller coupled to the data drivers" and "a gray voltage generator ... [that] generates

independent gamma curves for different pixel colors." The explanation presented above in reference to Claim 1 applies here.

Claims 13, 15, 17, and 19-21 depend from Claim 12 and are patentable over Park and Kudo for the same reasons as Claim 12.

Claims 7 and 18 are rejected under 35 USC 103(a) as being unpatentable over Park and Kudo and further in view of U.S. Patent No. 5,091,722 to Kitajima et al. ("Kitajima").

These rejections assume that Park and Kudo teach all the elements of Claims 1 and 12 from which Claims 7 and 18 depend. However, as explained above, Park and Kudo in fact do not teach all the elements of Claims 1 and 12. Thus, Claims 7 and 18 are patentable over Park, Kudo, and Kitajima.

Conclusion

Based on the foregoing, Claims 1, 2, 4-9, 11-13, 15-19, and 21 are now in condition for allowance. The Director is authorized to charge any deficiency in fees, or credit any overpayment, to Deposit Account No. 50-2257. Please telephone the undersigned attorney at (408) 392-9250 if there are any questions.

Respectfully submitted,

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